High Benzene Naphthas - Comments of Environmental Defense

(Submitted via Internet 6/14/02)

Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for high benzene naphthas.

The American Chemistry Council's Olefins Panel has prepared the test plan and robust summaries for the high benzene naphthas. The sponsor proposes a vast category which would include a grouping of 10 ethylene manufacturing streams comprising 19 CAS numbers and more than 100 individual chemicals based on information presented in Table 2. Individual chemicals include benzene, 1,3-butadiene, vinyl acetate, toluene, isoprene, hexane, styrene, naphthalene and at least 10 others found at a concentration of at least 5% in at least one of the streams.

The sponsor concludes that although some data are needed to characterize the streams for physiochemical endpoints, biodegradation and hydrolysis, no additional health effects studies are needed. While we did not review the ecological components of the test plan, we do have major concerns over the health effects section. We do recognize the complexity of the test plan and the difficulty in preparing it but we disagree with the sponsor's conclusion that no additional health effects studies are needed. The chemicals found in the 10 high benzene naphtha streams are structurally divergent and possess qualitatively different toxicological properties. While benzene is clearly the driver for cancer causing effects, other chemicals present in the steams are likely more significant for other effects such as reproductive, developmental and neurotoxic effects.

The test plan clearly summarized an abundance of data for most of the chemicals present in the streams in excess of 5% (i.e. benzene, 1,3-butadiene, toluene etc.), but the mammalian toxicity data on the streams themselves is very limited. For example, there is only one repeat dose study on the streams and this was a 5-day inhalation study on hydrotreated gasoline; no reproductive studies and only one developmental study using pyrolysis gasoline were reported. Moreover, some of the chemicals present at 5% or greater in some of the 10 streams covered in this test plan do not have adequate toxicity data (i.e. cyclopentadiene, cyclopentene and methylcyclopentane). The sponsor states on page 19 of the test plan that the many chemicals present in the high benzene naphtha streams could have antagonistic or synergistic interactions.

Based on the above considerations, we recommend that some of the mixtures themselves be subjected to toxicological evaluation. This approach was undertaken in a very credible way by the American Petroleum Institute in its test plan on gasoline blending streams. After reviewing the composition data presented in Table 2, we recommend that repeat dose, genotoxicity, reproductive and developmental studies be conducted on pyrolysis gasoline and quench loop pyrolysis oil. Data from these two streams should be usable to extrapolate to the other 8 streams.

Thank you for this opportunity to comment.

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